SEQUENCE LISTING

<110> University of Illinois at Chicago
Sharma, Arun
Hoffman, Ronald

<120> HUMAN HEMATOPOIETIC GROWTH REGULATORY GENE AND USES

<130> MBHB: CU08/PPA

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<170> PatentIn version 3.1

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tca aaa aca ggt tct tca ggc att ata gta agg tta agc act aac cat        96
Ser Lys Thr Gly Ser Ser Gly Ile Ile Val Arg Leu Ser Thr Asn His
            20                  25                  30

ttc cgg ctg aca tcc cgt ccc cag tgg gcc tta tat cag tat cac att       144
Phe Arg Leu Thr Ser Arg Pro Gln Trp Ala Leu Tyr Gln Tyr His Ile
        35                  40                  45

gac tat aac cca ctg atg gaa gcc aga aga ctc cgt tca gct ctt ctt       192
Asp Tyr Asn Pro Leu Met Glu Ala Arg Arg Leu Arg Ser Ala Leu Leu
    50                  55                  60

ttt caa cac gaa gat cta att gga aag tgt cat gct ttt gat gga acg       240
Phe Gln His Glu Asp Leu Ile Gly Lys Cys His Ala Phe Asp Gly Thr
65                  70                  75                  80
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Ile Leu Phe Leu Pro Lys Arg Leu Gln Gln Lys Val Thr Glu Val Phe
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agt aag acc cgg aat gga gag gat gtg agg ata acg atc act tta aca      336
Ser Lys Thr Arg Asn Gly Glu Asp Val Arg Ile Thr Ile Thr Leu Thr
            100                 105                 110

aat gaa ctt cca cct aca tca cca act tgt ttg cag ttc tat aat att      384
Asn Glu Leu Pro Pro Thr Ser Pro Thr Cys Leu Gln Phe Tyr Asn Ile
        115                 120                 125

att ttc agg agg ctt ttg aaa atc atg aat ttg caa caa att gga cga      432
Ile Phe Arg Arg Leu Leu Lys Ile Met Asn Leu Gln Gln Ile Gly Arg
    130                 135                 140

aat tat tat aac cca aat gac cca att gat att cca agt cac agg ttg      480
Asn Tyr Tyr Asn Pro Asn Asp Pro Ile Asp Ile Pro Ser His Arg Leu
145                 150                 155                 160

gtg att tgg cct ggc ttc act act tcc atc ctt cag tat gaa aac agc      528
Val Ile Trp Pro Gly Phe Thr Thr Ser Ile Leu Gln Tyr Glu Asn Ser
                165                 170                 175

atc atg ctc tgc act gac gtt agc cat aaa gtc ctt cga agt gag act      576
Ile Met Leu Cys Thr Asp Val Ser His Lys Val Leu Arg Ser Glu Thr
            180                 185                 190

gtt ttg gat ttc atg ttc aac ttt tat cat cag aca gaa gaa cat aaa      624
Val Leu Asp Phe Met Phe Asn Phe Tyr His Gln Thr Glu Glu His Lys
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ttt caa gaa caa gtt tcc aaa gaa cta ata ggt tta gtt gtt ctt acc      672
Phe Gln Glu Gln Val Ser Lys Glu Leu Ile Gly Leu Val Val Leu Thr
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aag tat aac aat aag aca tac aga gtg gat gat att gac tgg gac cag      720
Lys Tyr Asn Asn Lys Thr Tyr Arg Val Asp Asp Ile Asp Trp Asp Gln
225                 230                 235                 240

aat ccc aag agc acc ttt aag aaa gcc gac ggc tct gaa gtc agc ttc      768
Asn Pro Lys Ser Thr Phe Lys Lys Ala Asp Gly Ser Glu Val Ser Phe
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Leu Glu Tyr Tyr Arg Lys Gln Tyr Asn Gln Glu Ile Thr Asp Leu Lys
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        275                 280                 285

aca ctg cca ggg cct gcc atg ctc att cct gag ctc tgc tat ctt aca      912
Thr Leu Pro Gly Pro Ala Met Leu Ile Pro Glu Leu Cys Tyr Leu Thr
    290                 295                 300

ggt cta act gat aaa atg cgt aat gat ttt aac gtg atg aaa gac tta      960
Gly Leu Thr Asp Lys Met Arg Asn Asp Phe Asn Val Met Lys Asp Leu
305                 310                 315                 320

gcc gtt cat aca aga cta act cca gag caa agg cag cgt gaa gtg gga     1008
Ala Val His Thr Arg Leu Thr Pro Glu Gln Arg Gln Arg Glu Val Gly
                325                 330                 335

cga ctc att gat tac att cat aaa aac gat aat gtt caa agg gag ctt     1056
Arg Leu Ile Asp Tyr Ile His Lys Asn Asp Asn Val Gln Arg Glu Leu
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cga gac tgg ggt ttg agc ttt gat tcc aac tta ctg tcc ttc tca gga     1104
Arg Asp Trp Gly Leu Ser Phe Asp Ser Asn Leu Leu Ser Phe Ser Gly
        355                 360                 365

aga att ttg caa aca gaa aag att cac caa ggt gga aaa aca ttt gat     1152
Arg Ile Leu Gln Thr Glu Lys Ile His Gln Gly Gly Lys Thr Phe Asp
    370                 375                 380

tac aat cca caa ttt gca gat tgg tcc aaa gaa aca aga ggt gca cca     1200
Tyr Asn Pro Gln Phe Ala Asp Trp Ser Lys Glu Thr Arg Gly Ala Pro
385                 390                 395                 400

tta att agt gtt aag cca cta gat aac tgg ctg ttg atc tat acg cga     1248
Leu Ile Ser Val Lys Pro Leu Asp Asn Trp Leu Leu Ile Tyr Thr Arg
                405                 410                 415

aga aat tat gaa gca gcc aat tca ttg ata caa aat cta ttt aaa gtt     1296
Arg Asn Tyr Glu Ala Ala Asn Ser Leu Ile Gln Asn Leu Phe Lys Val
            420                 425                 430

aca cca gcc atg ggc atg caa atg aga aaa gca ata atg att gaa gtg     1344
Thr Pro Ala Met Gly Met Gln Met Arg Lys Ala Ile Met Ile Glu Val
        435                 440                 445
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gat gac aga act gaa gcc tac tta aga gtc tta cag caa aag gtc aca      1392
Asp Asp Arg Thr Glu Ala Tyr Leu Arg Val Leu Gln Gln Lys Val Thr
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gca gac acc cag ata gtt gtc tgt ctg ttg tca agt aat cgg aag gac      1440
Ala Asp Thr Gln Ile Val Val Cys Leu Leu Ser Ser Asn Arg Lys Asp
465                 470                 475                 480

aaa tac gat gct att aaa aaa tac ctg tgt aca gat tgc cct acc cca      1488
Lys Tyr Asp Ala Ile Lys Lys Tyr Leu Cys Thr Asp Cys Pro Thr Pro
                485                 490                 495

agt cag tgt gtg gtg gcc cga acc tta ggc aaa cag caa act gtc atg      1536
Ser Gln Cys Val Val Ala Arg Thr Leu Gly Lys Gln Gln Thr Val Met
            500                 505                 510

gcc att gct aca aag att gcc cta cag atg aac tgc aag atg gga gga      1584
Ala Ile Ala Thr Lys Ile Ala Leu Gln Met Asn Cys Lys Met Gly Gly
        515                 520                 525

gag ctc tgg agg gtg gac atc ccc ctg aag ctc gtg atg atc gtt ggc      1632
Glu Leu Trp Arg Val Asp Ile Pro Leu Lys Leu Val Met Ile Val Gly
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atc gat tgt tac cat gac atg aca gct ggg cgg agg tca atc gca gga      1680
Ile Asp Cys Tyr His Asp Met Thr Ala Gly Arg Arg Ser Ile Ala Gly
545                 550                 555                 560

ttt gtt gcc agc atc aat gaa ggg atg acc cgc tgg ttc tca cgc tgc      1728
Phe Val Ala Ser Ile Asn Glu Gly Met Thr Arg Trp Phe Ser Arg Cys
                565                 570                 575

ata ttt cag gat aga gga cag gag ctg gta gat ggg ctc aaa gtc tgc      1776
Ile Phe Gln Asp Arg Gly Gln Glu Leu Val Asp Gly Leu Lys Val Cys
            580                 585                 590

ctg caa gcg gct ctg agg gct tgg aat agc tgc aat gag tac atg ccc      1824
Leu Gln Ala Ala Leu Arg Ala Trp Asn Ser Cys Asn Glu Tyr Met Pro
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agc cgg atc atc gtg tac cgc gat ggc gta gga gac ggc cag ctg aaa      1872
Ser Arg Ile Ile Val Tyr Arg Asp Gly Val Gly Asp Gly Gln Leu Lys
    610                 615                 620

aca ctg gtg aac tac gaa gtg cca cag ttt ttg gat tgt cta aaa tcc      1920
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aga gtg aac acc aga ttt ttt gct cag tct gga gga aga ctt cag aat      2016
Arg Val Asn Thr Arg Phe Phe Ala Gln Ser Gly Gly Arg Leu Gln Asn
            660                 665                 670

cca ctt cct gga aca gtt att gat gta gag gtt acc aga cca gaa tgg      2064
Pro Leu Pro Gly Thr Val Ile Asp Val Glu Val Thr Arg Pro Glu Trp
        675                 680                 685

tat gac ttt ttt atc gtg agc cag gct gtg aga agt ggt agt gtt tct      2112
Tyr Asp Phe Phe Ile Val Ser Gln Ala Val Arg Ser Gly Ser Val Ser
    690                 695                 700

ccc aca cat tac aat gtc atc tat gac aac agc ggc ctg aag cca gac      2160
Pro Thr His Tyr Asn Val Ile Tyr Asp Asn Ser Gly Leu Lys Pro Asp
705                 710                 715                 720

cac ata cag cgc ttg acc tac aag ctg tgc cac atc tat tac aac tgg      2208
His Ile Gln Arg Leu Thr Tyr Lys Leu Cys His Ile Tyr Tyr Asn Trp
                725                 730                 735

cca ggt gtc att cgt gtt cct gct cct tgc cag tac gcc cac aag ctg      2256
Pro Gly Val Ile Arg Val Pro Ala Pro Cys Gln Tyr Ala His Lys Leu
            740                 745                 750

gct ttt ctt gtt ggc cag agt att cac aga gag cca aat ctg tca ctg      2304
Ala Phe Leu Val Gly Gln Ser Ile His Arg Glu Pro Asn Leu Ser Leu
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35 40 45

Asp Tyr Asn Pro Leu Met Glu Ala Arg Arg Leu Arg Ser Ala Leu Leu
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Phe Gln His Glu Asp Leu Ile Gly Lys Cys His Ala Phe Asp Gly Thr
65 70 75 80

Ile Leu Phe Leu Pro Lys Arg Leu Gln Gln Lys Val Thr Glu Val Phe
85 90 95

Ser Lys Thr Arg Asn Gly Glu Asp Val Arg Ile Thr Ile Thr Leu Thr
100 105 110

Asn Glu Leu Pro Pro Thr Ser Pro Thr Cys Leu Gln Phe Tyr Asn Ile
115 120 125

Ile Phe Arg Arg Leu Leu Lys Ile Met Asn Leu Gln Gln Ile Gly Arg
130 135 140

Asn Tyr Tyr Asn Pro Asn Asp Pro Ile Asp Ile Pro Ser His Arg Leu
145 150 155 160

Val Ile Trp Pro Gly Phe Thr Thr Ser Ile Leu Gln Tyr Glu Asn Ser
165 170 175

Ile Met Leu Cys Thr Asp Val Ser His Lys Val Leu Arg Ser Glu Thr
180 185 190

Val Leu Asp Phe Met Phe Asn Phe Tyr His Gln Thr Glu Glu His Lys
195 200 205

Phe Gln Glu Gln Val Ser Lys Glu Leu Ile Gly Leu Val Val Leu Thr
210 215 220

Lys Tyr Asn Asn Lys Thr Tyr Arg Val Asp Asp Ile Asp Trp Asp Gln
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Asn Pro Lys Ser Thr Phe Lys Lys Ala Asp Gly Ser Glu Val Ser Phe
245 250 255

Leu Glu Tyr Tyr Arg Lys Gln Tyr Asn Gln Glu Ile Thr Asp Leu Lys
260 265 270

Gln Pro Val Leu Val Ser Gln Pro Lys Arg Arg Arg Gly Pro Gly Gly
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Thr Leu Pro Gly Pro Ala Met Leu Ile Pro Glu Leu Cys Tyr Leu Thr
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Gly Leu Thr Asp Lys Met Arg Asn Asp Phe Asn Val Met Lys Asp Leu
305 310 315 320

Ala Val His Thr Arg Leu Thr Pro Glu Gln Arg Gln Arg Glu Val Gly
325 330 335

Arg Leu Ile Asp Tyr Ile His Lys Asn Asp Asn Val Gln Arg Glu Leu
340 345 350

Arg Asp Trp Gly Leu Ser Phe Asp Ser Asn Leu Leu Ser Phe Ser Gly
355 360 365

Arg Ile Leu Gln Thr Glu Lys Ile His Gln Gly Gly Lys Thr Phe Asp
370 375 380

Tyr Asn Pro Gln Phe Ala Asp Trp Ser Lys Glu Thr Arg Gly Ala Pro
385 390 395 400

Leu Ile Ser Val Lys Pro Leu Asp Asn Trp Leu Leu Ile Tyr Thr Arg
405 410 415

Arg Asn Tyr Glu Ala Ala Asn Ser Leu Ile Gln Asn Leu Phe Lys Val
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Thr Pro Ala Met Gly Met Gln Met Arg Lys Ala Ile Met Ile Glu Val
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Asp Asp Arg Thr Glu Ala Tyr Leu Arg Val Leu Gln Gln Lys Val Thr
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Lys Tyr Asp Ala Ile Lys Lys Tyr Leu Cys Thr Asp Cys Pro Thr Pro
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Ser Gln Cys Val Val Ala Arg Thr Leu Gly Lys Gln Gln Thr Val Met
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Ala Ile Ala Thr Lys Ile Ala Leu Gln Met Asn Cys Lys Met Gly Gly
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565 570 575

Ile Phe Gln Asp Arg Gly Gln Glu Leu Val Asp Gly Leu Lys Val Cys
580 585 590

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595 600 605

Ser Arg Ile Ile Val Tyr Arg Asp Gly Val Gly Asp Gly Gln Leu Lys
610 615 620

Thr Leu Val Asn Tyr Glu Val Pro Gln Phe Leu Asp Cys Leu Lys Ser
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Ile Gly Arg Gly Tyr Asn Pro Arg Leu Thr Val Ile Val Val Lys Lys
645 650 655

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660 665 670

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675 680 685

Tyr Asp Phe Phe Ile Val Ser Gln Ala Val Arg Ser Gly Ser Val Ser
690 695 700

Pro Thr His Tyr Asn Val Ile Tyr Asp Asn Ser Gly Leu Lys Pro Asp
705 710 715 720

His Ile Gln Arg Leu Thr Tyr Lys Leu Cys His Ile Tyr Tyr Asn Trp
725 730 735

Pro Gly Val Ile Arg Val Pro Ala Pro Cys Gln Tyr Ala His Lys Leu
740 745 750

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Ser Asn Arg Leu Tyr Tyr Leu
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            20                  25                  30

Phe Arg Gly Ser Ser Ser Gly Asp Pro Arg Ala Asp Pro Arg Ile Glu
        35                  40                  45

Ala Ser Arg Glu Arg Arg Ala Leu Glu Glu Ala Pro Arg Arg Glu Gly
    50                  55                  60

Gly Pro Pro Glu Arg Lys Pro Trp Gly Asp Gln Tyr Asp Tyr Leu Asn
65                  70                  75                  80

Thr Arg Pro Val Glu Leu Val Ser Lys Lys Gly Thr Asp Gly Val Pro
                85                  90                  95

Val Met Leu Gln Thr Asn Phe Phe Arg Leu Lys Thr Lys Pro Glu Trp
            100                 105                 110

Arg Ile Val His Tyr His Val Glu Phe Glu Pro Ser Ile Glu Asn Pro
        115                 120                 125

Arg Val Arg Met Gly Val Leu Ser Asn His Ala Asn Leu Leu Gly Ser
    130                 135                 140

Gly Tyr Leu Phe Asp Gly Leu Gln Leu Phe Thr Thr Arg Lys Phe Glu
145                 150                 155                 160
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Gln Glu Ile Thr Val Leu Ser Gly Lys Ser Lys Leu Asp Ile Glu Tyr
165 170 175

Lys Ile Ser Ile Lys Phe Val Gly Phe Ile Ser Cys Ala Glu Pro Arg
180 185 190

Phe Leu Gln Val Leu Asn Leu Ile Leu Arg Arg Ser Met Lys Gly Leu
195 200 205

Asn Leu Glu Leu Val Gly Arg Asn Leu Phe Asp Pro Arg Ala Lys Ile
210 215 220

Glu Ile Arg Glu Phe Lys Met Glu Leu Trp Pro Gly Tyr Glu Thr Ser
225 230 235 240

Ile Arg Gln His Glu Lys Asp Ile Leu Leu Gly Thr Glu Ile Thr His
245 250 255

Lys Val Met Arg Thr Glu Thr Ile Tyr Asp Ile Met Arg Arg Cys Ser
260 265 270

His Asn Pro Ala Arg His Gln Asp Glu Val Arg Val Asn Val Leu Asp
275 280 285

Leu Ile Val Leu Thr Asp Tyr Asn Asn Arg Thr Tyr Arg Ile Asn Asp
290 295 300

Val Asp Phe Gly Gln Thr Pro Lys Ser Thr Phe Ser Cys Lys Gly Arg
305 310 315 320

Asp Ile Ser Phe Val Glu Tyr Tyr Leu Thr Lys Tyr Asn Ile Arg Ile
325 330 335

Arg Asp His Asn Gln Pro Leu Leu Ile Ser Lys Asn Arg Asp Lys Ala
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Leu Lys Thr Asn Ala Ser Glu Leu Val Val Leu Ile Pro Glu Leu Cys
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370 375 380

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Lys Val Leu Arg Asp Trp Asn Met Glu Leu Asp Lys Asn Val Thr Glu
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Val Gln Gly Arg Ile Ile Gly Gln Gln Asn Ile Val Phe His Asn Gly
435 440 445

Lys Val Pro Ala Gly Glu Asn Ala Asp Trp Gln Arg His Phe Arg Asp
450 455 460

Gln Arg Met Leu Thr Thr Pro Ser Asp Gly Leu Asp Arg Trp Ala Val
465 470 475 480

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485 490 495

Leu Tyr Arg Ala Ala Ser Gly Met Gly Leu Arg Ile Arg Ser Pro Gln
500 505 510

Glu Phe Ile Ile Tyr Asp Asp Arg Thr Gly Thr Tyr Val Arg Ala Met
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Glu His Arg Lys Leu Pro Ser Arg Ile Val Phe Tyr Arg Asp Gly Val
675 680 685

Ser Ser Gly Ser Leu Lys Gln Leu Phe Glu Phe Glu Val Lys Asp Ile
690 695 700

Ile Glu Lys Leu Lys Thr Glu Tyr Ala Arg Val Gln Leu Ser Pro Pro
705 710 715 720

Gln Leu Ala Tyr Ile Val Val Thr Arg Ser Met Asn Thr Arg Phe Phe
725 730 735

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740 745 750

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755 760 765

Gln Gly Thr Val Ser Pro Thr Ser Tyr Asn Val Leu Tyr Ser Ser Met
770 775 780

Gly Leu Ser Pro Glu Lys Met Gln Lys Leu Thr Tyr Lys Met Cys His
785 790 795 800

Leu Tyr Tyr Asn Trp Ser Gly Thr Thr Arg Val Pro Ala Val Cys Gln
805 810 815

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